

VARIATIONS IN FACIAL RELATIONSHIPS IN AMERICAN NEGROES
OF THE SAN FRANCISCO BAY AREA: THEIR SIGNIFICANCE IN
COMPARISON WITH VARIATIONS AS REPORTED BY DOWNS (1)
AMONG AMERICAN WHITES IN CHICAGO, ILLINOIS

UNIVERSITY OF CALIFORNIA
POST-GRADUATE DIVISION
OF
ORTHODONTICS

WENDELL N. COTTON
June 8, 1949

VARIATIONS IN FACIAL RELATIONSHIPS IN AMERICAN NEGROES
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WENDELL N. COTTON, A.B., D.D.S.

I. INTRODUCTION

The present paper presents the findings of a study which has been pursued to determine if significant differences exist in the facial and dental patterns of American Negroes and whites. The material collected, however, can be used only for a rough comparison because time did not permit careful screening of the individuals.

Downs (1) considers his findings in twenty individuals possessing excellent untreated occlusions as standards against which malocclusions may be judged. He admits that exceptions will be found to the means and extremes derived in his study because his sample is small.

Since the individuals studied by the author do not all possess clinically excellent occlusions as did the individuals studied by Downs; it is to be expected that wider variations will occur because there are wider variations in balance and harmony in the individuals studied. Therefore, no attempt will be made to establish these findings as representing the range

of the facial and dental pattern within which one might expect to find the normal in Negroes, but merely to discover whether the Downs material has any usable correlations when analyzing Negroes roentgenographically.

II. METHOD AND MATERIAL

The method employed in the study was roentgenographic cephalometry, the technique of which is described in various papers familiar to orthodontists.

The control material studied was derived from twenty living individuals, all Negroes, ranging in age from 11 to 34 and equally divided as to sex. Models, photographs, and cephalometric roentgenograms were taken of each. All individuals did not possess clinically excellent occlusions but all possess more or less normal occlusions.

Tracings were made of all lateral head films with the teeth in occlusion and measurements made of the same angles measured by Downs (1). It is assumed that the reader is familiar with the report by Downs so that no detailed explanation will be made of the data used.

III. OBSERVATIONS

1. Skeletal Pattern

Facial Angle. - This angle is an expression of the degree of recession or protrusion of the chin. The mean value for my group was 87.25 degrees. The range was from 80 to 91 degrees.

Mandibular Plane Angle. This is a measure of the relationship between the Frankfort plane and a tangent to the lower border of the mandible, recently brought into prominence by Tweed (2) and Salzmann (3) as a clinical diagnostic aid. In

my controls the angles formed by these two planes ranged from 17 to 35 degrees. The mean was 27.25.

Y (Growth) Axis.- As the face swings out from under the cranium in its growth and development from birth to maturity, it is said to grow in a downward and forward direction. A line from sella turcica to gnathion has been used as an expression of the direction of this growth and called the Y axis.

The angular relationship between the Y axis and the Frankfort plane of the control group yielded a mean of 63.3 degrees with a range of 57 to 69 degrees.

Angle of Convexity. - This is a measure of the protrusion of the maxillary part of the face to the total profile. The angle is formed by two lines, one from nasion and the other from pogonion, both metting at A. The mean of the control group was + 9.6 degrees, and ranging from + 4 to + 20 degrees. The point A did not fall behind the facial plane in any individual so that there was no minus reading.

A-B Plane.- The location of this plane in relation to the facial plane is a measure of the anterior limit of the denture bases to each other and to the profile. In the control group the relation of this plane to the facial plane was found to range from -3 degrees to a posterior position of B which could be read as -15 degrees. The mean was -7.7 degrees.

2. Relationship of the Denture to the Skeletal Pattern

Cant of the Occlusal Plane.- The angular relation between the occlusal plane and the Frank fort plane in the control series ranged from +8 degrees to +17 degrees with a mean of 11.8 degrees.

Axial Inclination of Mandibular Incisor to Mandibular Plane.-

The range in the control is -3.5 degrees to +22 degrees, positive readings being the number of degrees in excess of 90 degrees and vice-versa for minus readings.

Axial Inclination of Lower Incisors to the Occlusal Plane.-

To test further, the tip of the lower incisors to their axis may be compared with the occlusal plane. The inferior inside angle was read and the plus or minus deviation from a right angle recorded. The range was from +12 to +35 degrees with a mean of +22.5 degrees.

Axial Inclination of Upper and Lower Incisors.- This is a measure of the degree of procumbency of the incisor teeth. In order to read the relation of the upper to the lower teeth, lines are drawn representing their axes. A tabulation of the inside angles of this relationship in the control cases yielded a mean of 123 degrees with a range from 105 degrees to 144 degrees.

Protrusion of Maxillary Incisors.- The distance of the incisal edge of the maxillary central incisor to the line A-P is a measure of maxillary dental protraction and is read in millimeters. In the control group it was found to vary from +6mm. to +11mm. with a mean of 8.5mm.

3. Assessment of Anteroposterior Dysplasia (4)

<u>Dimension</u>	<u>Standard</u>		<u>Control</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Glenoid Fossa to Sella	18	17	19	18
Sella to Ptm	18	17	20	17
Maxillary Length	52	52	56	55
Ptm - 6	15	16	21	21
Mandibular Length	103	101	113	108

IV. DISCUSSION

The facial angle in the control group has practically the same range as Downs' standard, being 2 degrees less for the minimum value and 4 degrees less for the maximum. The means are practically identical. The differences are so minute that comment is hardly necessary; but, since the angle is smaller in Class II types (1), the difference could mean a slightly greater trend toward the Class II facial pattern.

In studying the mandibular plane angle, the range of value is somewhat greater in the control than in Downs' standard. This was also noted by Mayne (5) and Bushra (6). Downs (1) accounts for this in two ways: First, in limited sampling of material of this nature, the minimum and maximum extremes can be expected to vary when additional material is studied; second, they may have been less critical in selecting material. Mayne's minimum and maximum values more extreme than mine but his mean was smaller by 4 degrees. Bushra's minimum and maximum values were almost identical to mine being slightly more extreme but his mean was also smaller by 4 degrees.

The Y (Growth) Axis shows a tendency toward being slightly larger in the control group but with an almost identical range. This angle is larger in Class II facial patterns than in those with Class III tendencies (1) so that a slight tendency toward the Class II pattern is noted.

The range of values is much greater in the control group for the angle of convexity, being also on the positive side, with large positive angles associated with relative prominence of the maxillary denture (1).

The AB plane suggest a Class II facial type with large negative values (1), so that there is a slight tendency in this direction in the control group, all values being slightly more negative than in Downs' standard.

Cant of the Occlusal plane values show a smaller range but with the mean being slightly more positive than in Downs' standard. Here again larger positive angles are found in Class II facial patterns.

The range of the angle expressed as axial inclination of upper and lower incisors is so great that a true picture of central tendency is not given. The mean is 123 degrees but the median which is not affected by extreme values is 129 degrees. This tremendous variation is due again to non-critical selection of cases and to extending the sampling. There is therefore a slightly greater tendency toward procumbency of the incisors in the control group.

The angle expressed as axial inclination of lower incisors to the occlusal plane shows a much larger range in the control group with larger positive values. Positive values increase as these teeth incline forward.

The axial inclination of the mandibular incisor to the mandibular plane likewise shows a much greater range with a tendency toward greater positivity, the angle being positive when incisors are tipped forward on the denture base.

The distance of the incisal edge of the maxillary central incisor to the line A*P tends to be greater than in Downs' standard indicating a tendency to maxillary dental protraction.

The assessment of anteroposterior dysplasia shows no

significant differences except that all values in the control group are proportionately larger than in the standard but the same relative harmony exists between the various measurements intramaxillary and intermaxillary. Age could be the factor because the mean age is 11.5 years in the standard group and 17 years in the control group.

The results of this study of twenty individuals with normal occlusions and a review of similar investigations appear to warrant the following conclusions:

(1) This study cannot be used as a standard for Negroes because the sampling was non-critical as to excellence of the occlusion.

(2) The tendency in the group studied is slightly toward the Class II pattern. This is not to say that the Class II pattern obtains, but that there is a greater relative tendency in this respect than in the standard group represented in Downs' study.

(3) There is a slightly greater tendency of the incisors to be tipped forward on the denture base in the control group.

(4) Since the extension of the study by Mayne and Bushra beyond the twenty cases of Downs, with the subsequent increase in the ranges, and the comparison of my figures with those available in the extension studies showing striking similarity, I feel safe in stating that no significant differences exist that would warrant establishing a new set of standards for Negroes. Nor is enough data available to substantiate the assumption that Negroes in general normally have a so-called "double - protrusion".

There is a slight tendency in this direction when weighed against Downs' data but, again, I can claim only normal occlusions for a standard, few of which would be considered excellent.

CASE ANALYSIS: DATA ON THE TWENTY INDIVIDUALS OF
THE CONTROL GROUP

SKELETAL PATTERN

	Minimum	Average	Maximum
Facial Angle	80	87.35	91
Mandibular Plane Angle	17	27.25	35
I (Growth) Axis	53	63.3	69
Angle of Convexity	+4	+9.6	+20
AB Plane-Facial Plane Angle	-15	-7.7	-3

DENTURE TO SKELETAL PATTERN

Cant of Occlusal Plane	+8	+11.8	+17
/l to I Angle	105	123	144
/l to Occlusal Plane	12	22.5	35
/l to Mandibular Plane	-3.5	+6.6	+22
I to AP Plane (mm.)	6	8.5	11

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6. Bushra, E.: Variations in the Human Facial Pattern in Norma Lateralis, Graduate Thesis, University of Illinois, College of Dentistry, 1947.

COLLEGE OF DENTISTRY
DEPARTMENT OF ORTHODONTICS

CLINICAL ANALYSIS

Approved by

5-19-49

Thomas, Jewel

Subject

5-3-36

13

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Down)

Betw.

Ave.

Max.

Element

Treatment

Ortho.

Frankel Angle

Anterior Plane Angle

Gonial Angle

Rancho Bernardo

Anterior Ramus Angle

Denture fit Bi-lateral Pattern

Anterior Posterior Pattern

Vertical Pattern

Frontal Pattern

Posterior Pattern

Anterior Pattern

Posterior Pattern

Vertical Pattern

Frontal Pattern

Posterior Pattern

Anterior Pattern

Posterior Pattern

Vertical Pattern

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Vertical Pattern

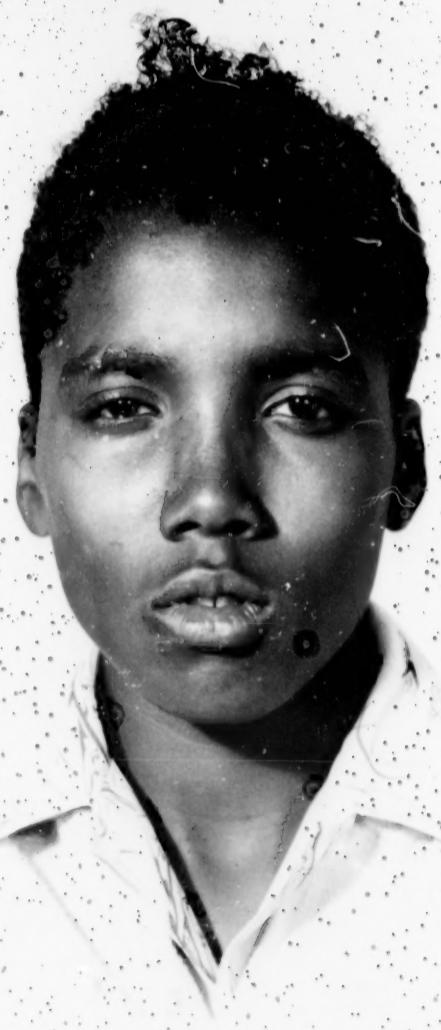
Frontal Pattern

Posterior Pattern

Anterior Pattern



A RESEARCH



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

5-19-49

Approved by

Patient: Wallace, Deloris

Student:

Initial date: 12-22-36 Age: 12

Angie Classification:

Angle's Class II Pattern
Class I Malocclusion

Before	After	Change
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ANALYSIS

Treatment	Change
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ANALYSIS

<table border="



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

5-19-49

Approved by

Blanchard, Florida

Student

Birth Date 12-19-37

Age 11

Angle Classification

Minimum Average Maximum
(Data from Downs)

Skeletal Patterns 82.0° 87.7° 95.0°

Facial Angle 17.0 21.0 28.0

Mandibular Plane Angle 53.0 59.4 66.0

Z (Growth) Axis -8.5 0.0 +10.6

AB Plane-Facial Plane / -9.0 -4.8 0.0

	Before Treatment	After Treatment	Net Change
Facial Angle	86		
Mandibular Plane Angle	29		
Z (Growth) Axis	62		
Angle of Convexity	+12		
AB Plane-Facial Plane /	-9		

Denture to Skeletal Pattern

Cent of Occlusal Plane 1.5 +9.3 +14.0

Line 1 Angle 130.6 155.4 156.0

Ant/Occlusal Plane 3.5 31.5 20.0

I to Mandibular Plane -8.5 +2.4 +7.0

I to AP Plane (mm) -1.0 +2.7 +5.0

	Before	After	Net
Cent of Occlusal Plane	+11		
Line 1 Angle	106		
Ant/Occlusal Plane	31		
I to Mandibular Plane	+17		
I to AP Plane (mm)	10		

Assessment of Anteroposterior Dysplasia

STANDARDS

Cross cut one

Dimension Male Female Patient's

DIFFERENCES

Orthognathic Prognosis

Glenoid Fossa to Ia 18 17 17

Glenoid to Pm 18 17 16.5

Maxillary Depth 32 35 57

Anterior Posterior 16 16 19

Medio-lateral Width 103 104 105

Total 103 104 105

	1	2	3	4	5	6
Glenoid Fossa to Ia	17					
Glenoid to Pm	16.5					+0.5
Maxillary Depth	57					-5
Anterior Posterior	19					-3
Medio-lateral Width	105					+4
Total	103	104	105			-8
						+4.5
						-3.5



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COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Approved by

Date 5-19-49

Patient Moore, Laura

Birth date 8-23-34 Age 14

Angle Classification

Skeletal Pattern	Minimum	Average	Maximum	Before Treatment	After Treatment	Note
	(Data from Downs)			Treatment	Treatment	Change
Facial Angle	82.8°	87.7°	95.0°	89		
Mandibular Plane Angle	17.8	21.0	28.0	21		
Y (Growth) Axis	53.0	59.4	66.0	64		
Angle of Convexity	-8.5	0.0	10.0	+7		
AB Plane-Facial Plane	-9.0	-4.8	0.0	-5		

Denture to Skeletal Pattern

	Before	After	Note
Gmt of Occlusal Plane	+1.5	+9.3	+14.0
I to I Angle	130.0	135.4	150.0
I to Occlusal Plane	3.5	14.5	20.0
I to Mandibular Plane	-8.5	+1.4	+7.0
I to AP Plane (mm)	-1.0	-2.3	-5.0

Assessment of Anteroposterior Dysplasia

Dimension	STANDARDS (Cross out one)		Patient's	DIFFERENCE Orthognathic Prognathic	
	Male	Female			
Glenoid Fossa to Sella	18	17	23	-6	
Sella to Ptm	18	17	14	-4	+3
Maxillary length	53	52	54	-2	
SNB	17	16	21	-5	
Maxillary arch length	101	101	109	+8	
			Total	+13	+11
					-2



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COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Date	1-12-49	Approved by			
Patient	Collins, Dr. Daniel A.	Student			
Birth date	Age	Angle Classification			
Skeletal Pattern (Data from Downs)					
	Minimum	Average	Maximum	Belofsky Treatment	Angle of Mandibular Plane
Facial Angle	82.0°	87.3°	95.0°	87	
Mandibular Plane Angle	-17.0	-21.0	-28.0	30	
Growth Axis	53.0	59.4	66.0	65	
Angle of Convexity	-8.5	-9.0	-10.0	+16	
AB Plane-Facial Plane /	-9.0	-4.5	0.0	-11	
Denture to Skeletal Pattern					
Gang of Occlusal Plane	-1.5	-9.3	-11.0	+12	
to I ₁ Angle	136.0	135.4	150.0	144	
to Occlusal Plane	3.5	14.5	20.0	17	
to Mandibular Plane	-8.5	-13.4	-7.0	+1	
to AP Plane (mm)	-1.0	-2.7	-5.0	6	
Assessment of Anteroposterior Dysplasia					
STANDARDS (Cross-cut one)					
Dimension	Male	Female	Patient's	D 1 R	Orthognathic Surgery
Anterior Sella to Sella	18	17	20	2	
Anterior Posterior	18	13	22	4	
Maxillary Length	52	47	59.5	7.5	
Anterior Posterior	15	15	15		
Maxillary Length	130	120	130	17	
			-13.5	+17	
					+3.5



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Date 5-19-49

Approved by

Patient Brady, Hattie Mae

Student

Arch date 7-1-36

Age 12

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Downs)

	Before Treatment	After Treatment	Change
--	------------------	-----------------	--------

Facial Angle

82.0° 87.7° 95.0°

87

Mandibular Plane Angle

17.0° 21.0° 28.0°

30

(Growth) Axis

53.0° 59.4° 65.0°

64

Angle of Convexity

-8.5° -9.0° -10.0°

+12

R Plane Facial Plane /

-9.0° -1.8° 0.0°

-7

Defining Skeletal Pattern

	Before Treatment	After Treatment	Change
--	------------------	-----------------	--------

Anterior Posterior Plane

-1.5° +9.3° +14.0°

+11

SNB Angle

130.0° 135.4° 150.0°

123

ANB Ondibular Plane

-3.5° -11.5° -20.0°

-22

Mandibular Plane

-2.5° +1.4° +7.0°

+3

ANB Plane (mm.)

-1.0° +2.1° +6.6°

11

Assessment of Anteroposterior Dysplasia

STANDARDS

Cross-cut one

Male Female

Patient's

DENTAL RADIOPHOTOGRAPHIC

OSTEOPATHIC RECORDS

Blended Baseline Sella

18

18

-1

SNB from

8

16

+1

SNB Strength

5.0°

56

-4

ANB from

18

22

-6

ANB Strength

3.0°

115

+14

Total ANB

-11

+15

ANB from SNB

18

17

+1

ANB from SNB

18

17

+1



5-19-49

Eakins, Claudette

10-7-36 12

Altitude Average Maximum
Date from Town

38

35

30

13

-3

11

121

24

11

9

13

-1

13

-1

53

-3

22

-6

11

10

14

10

10

10



COLLEGE OF DENTISTRY
REVISION OF ORTHODONTICS
CASE ANALYSIS

5-19-49

Approved by

Student

Assent: Hall, O. C.

Date: 5-12-49

Age:

14

Angle of Classification:

Skeletal Patterns

Minimum Average Maximum
(Data from Downs)

	32.0°	87.7°	95.0°
Facial Angle			
Mandibular Plane Angle	17.0°	21.5°	28.0°
g (Growth) Axis	53.0	59.4	66.0
Angle of Convexity	-8.5	0.0	10.0
AB Plane-Facial Plane /	+9.0	-4.8	0.0

	Before Treatment	After Treatment	Note
	88		
	29		
	63		
	+13		
	-7		

Denture to Skeletal Pattern

	Mean	SD	Range
Shift of Occlusal Plane	-0.35	+9.3	+14.0
I to I Angle	130.0	135.4	150.0
I to O (Oclusal Plane)	-3.5	14.5	20.0
I to Mandibular Plane	-8.5	+1.4	+7.0
I to AP Plane (mm.)	-1.0	2.1	5.0

	Before Treatment	After Treatment	Note
	+9		
	122		
	24		
	+5		
	10		

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross-cut one)

Male Female

Patient's

Differences from
Orthognathic Prognosis

Dimension	Mean	SD	Range	Total	Note
Glenoid Fossa to Sella	18.0	1.8	24	-6	
Maxillary Plane to Orbita	18	1.7	17	+1	
Maxillary length	52	5.0	55	-3	
Anterior Posterior length	66	6.0	24	-9	
Maxillary width	10.0	1.0	108	+5	
Totals				-18	+6

Sum of All dimensions

-12



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Approved by

5-19-49

Abney, Rudolph

Student

11-30-31

Age: 14

Stage Classification

Minimum Average Maximum
(Data from Downs)

Skeletal Pattern

Pattern	Average	No.
Treatment		
Treatment		
Treatment		

Angle of Occlusion

86

Condylar Plane Angle

27

Gonial Angle

63

Angle of Condyle

+7

Surface Relationship

-5

Deflection to Skeletal Pattern

Pattern	Average	No.
Posterior	111	
Anterior	126	
Neutral	24	
+	+6	
-	10	

ASSESSMENT OF ASSISTANT IN DYSFUNCTION

STANDARD

24	-6
22	-4
55	-3
24	-9
123	-20
	-22
	-20



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DIVISION OF ORTHODONTICS
CASE ANALYSIS

5-19-49

Approved by

Student

3-21-49 ABB 13

Angle Classification

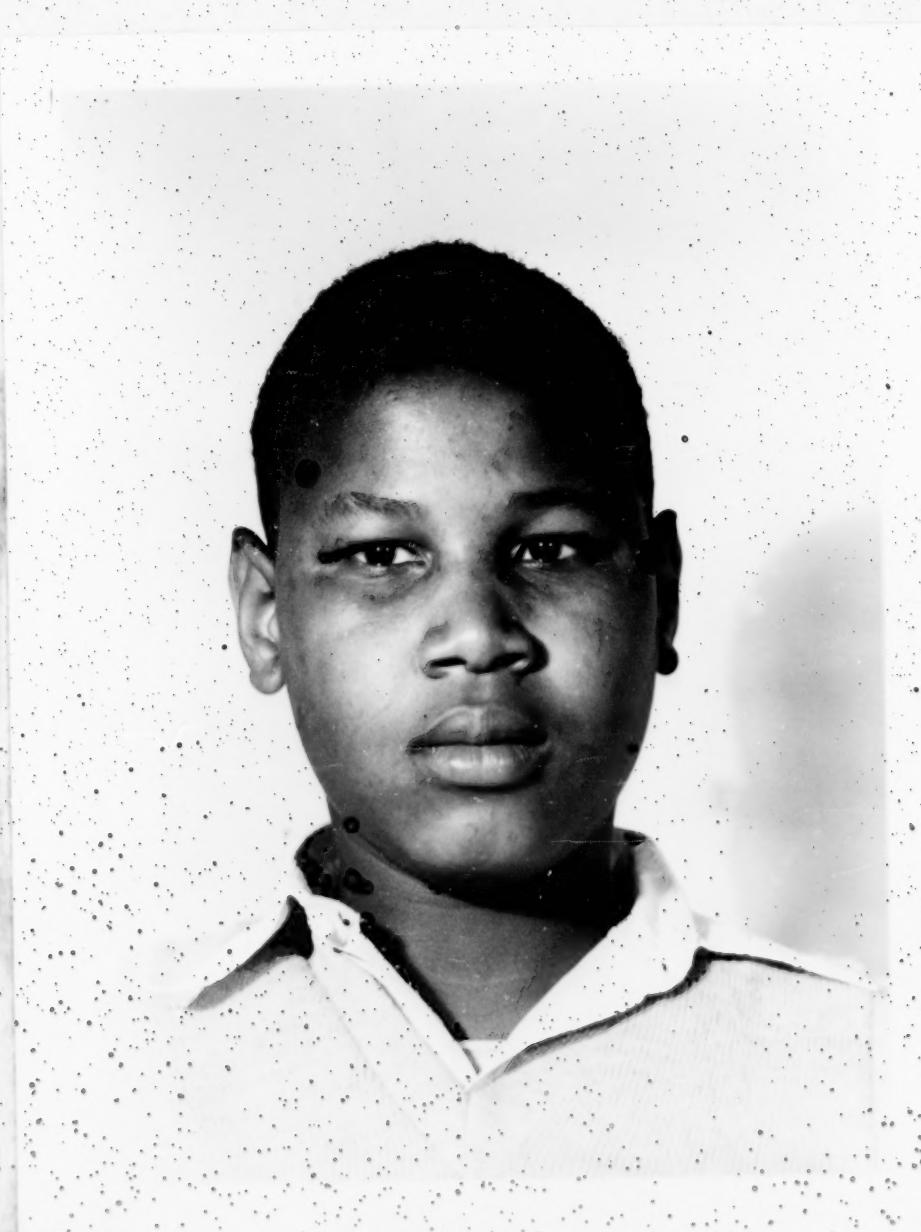
	Minimum	Average	Maximum		Before Treatment	After Treatment	% Change
<u>Skeletal Pattern</u>							
Facial Angle	82.6°	87.47°	95.0°		88		
Mandibular Plane Angle	17.0	21.0	28.0		30		
Growth Axis	53.0	59.4	66.0		60		
Angle of Convexity	-8.5	0.0	+10.0		+13		
AB Plane/Facial Plane /	-9.0	-4.0	0.0		-8		
<u>Benture to Skeletal Pattern</u>							
Gang of Occlusal Plane	13.5	9.3	11.0		+13		
Total Angle	130.0	135.4	150.0		114		
to Occlusal Plane	3.5	14.5	6.0		+22		
to Mandibular Plane	-6.5	-1.0	-7.0		+4		
to AP Plane /mm.	-1.0	-2.7	5.0		10		

Assessment of Anteroposterior Dysplasia

Dimension	STANDARDS (Cross out one)		Patient's Value	DIFFERENCE Orthognathic Prognosis	
	Male	Female			
Nasion to Sella	18	17	14		+4
SN to Ptm	16	17	22	-4	
SN to Ment	52	52	56	-4	
SN to Ment	15	16	25	-10	
Dribute length	183	190	108		+7
Average Difference				-18	+11

Units of Anteroposterior
Dysplasia = Prognostic Score

-7



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

5-19-49

Approved by

Student

Wagner, Betty Jo

2-23-36

13.

Angle Classification

Skeletal Pattern Maximum Average Maximum
(Data from Downs)

Buccal Angle 82.0° 81.7° 95.9°

Condylar Plane Angle 26.6° 21.0° 28.0°

Y-Growth Axis 51.0° 59.4° 66.0°

Angle of Convexity -8.5° -9.8° -10.0°

AB Plane-Facial Plane / 129.0° 148.8° 0.0°

	Before Treatment	After Treatment	Net Change
Buccal Angle	83		
Condylar Plane Angle	31		
Y-Growth Axis	67		
Angle of Convexity	+13		
AB Plane-Facial Plane /	-10		

Definite to Skeletal Pattern

Gonio-Condylar Plane 84.5° 89.3° 94.0°

Gonio-Sagittal Angle 130.0° 135.4° 150.0°

Occlusal Plane 13.5° 14.5° 16.0°

Condylar Plane -6.5° +1.4° +7.0°

AP Plane (mm) -1.0° 2.7° 5.0°

	Before	After	Net
Gonio-Condylar Plane	+17		
Gonio-Sagittal Angle	127		
Occlusal Plane	+22		
Condylar Plane	+8		
AP Plane (mm)	7		

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross out one)
Male Female

D I F F E R E N C E
Orthognathic Prognathic

	Patient's		
Frontal Sella to Sella	18	17	-2
Frontal Sella to Orbita	18	17	-1
Frontal Orbita to Orbita	58	52	-2
Frontal Orbita to Mentum	10	19	-3
Mental Sella to Sella	10	108	+7
Totals:			-8
			+7

-1



COLLEGE OF DENTISTRY
DEPARTMENT OF ORTHODONTICS
CLINICAL CASE ANALYSIS

1-13-49

Approved by

Patient: Kimbrough, Karl

Student:

Date:

Age: 34

Angle Classification:

Skeletal Pattern

	Minimum	Average	Maximum
(Data from Downs)			
Facial Angle	82.0°	87.7°	95.0°
Mandibular Plane Angle	17.9	21.6	28.0
Growth Axis	53.0	59.4	66.0
Angle of Convexity	-8.5	-6.0	-10.0
AB-Plane-Facial Plane /	-5.0	-4.8	-0.0

	Before Treatment	After Treatment	Net Change
Facial Angle	91		
Mandibular Plane Angle	18		
Growth Axis	58		
Angle of Convexity	+7		
AB-Plane-Facial Plane /	-6		

Denture to Skeletal Pattern

	Before	After	Net
Gmt. of Occlusal Plane	-1.5	+9.3	+14.8
I to I Angle	130.0	135.4	150.0
I to Occlusal Plane	3.9	14.5	20.0
I to Mandibular Plane	-8.5	+1.4	+7.0
I to AP Plane (mm)	-1.0	2.7	5.0

	Before	After	Net
Gmt. of Occlusal Plane	+8		
I to I Angle	129		
I to Occlusal Plane	+17		
I to Mandibular Plane	+7		
I to AP Plane (mm)	9		

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross out one)
Male Female Patients

D I F T R R O P H A S E
Orthognathic Standards

	Male	Female	Patients	
Osteoid Resorb to Sella	18	24	13	+5
Maxillary Plane	18	14	22.5	-4.5
Maxillary Length	87	85	65	-12
Mandibular Plane	55	60	29	-11
Mandibular Length	55	60	113	+10
Totals				-31.5 +15

Anteroposterior
Dysplasia Index

-16.5



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Date 5-19-49

Approved by

Patient Davis, Dorothy Jean

Student

Birth date 8-31-36 Age 12

Angle Classification

Skeletal Patterns

Facial Angle

Minimum 82.0° Average 83.7° Maximum 95.0°
(Data from Downs)

Before Treatment

After Treatment

88

Mandibular Plane Angle

17.0° 21.0° 28.0°

29

Y-Growth Axis

53.0° 59.4° 56.0°

62

Angle of Convexity

-8.5° -9.0° -10.0°

+4

AB Plane-Facial Plane

7.0° -4.8° -0.3°

-3

Denture to Skeletal Pattern

Cent of Occlusal Plane

-1.5° +9.3° +14.0°

Before

After

+13

T-M-L Angle

130.0° 135.4° 150.0°

123

T to Occlusal Plane

-3.5° -14.5° -20.0°

18

T to Mandibular Plane

-8.5° -16.1° -7.0°

+3

T to AP Plane (mm)

-1.0° -2.7° -5.0°

8

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross out one)
Male Female Patient's

D I F F E R E N C E
Orthognathic Prognathic

Dimension

Glenoid Fossa to Sella

18 17

17

Neck to Pm

16 17

15

+2

Mandibular Length

52 51

52

Anterior Posterior

15 16

20

-4

Condylar to Sella

103 101

108

+7

Anterior Posterior

108 106

107

-4

+9

Totals

Assessment of Anteroposterior Dysplasia

versus 1.0 mm per year

-5



CHIEF OF STAFF DIVISION OF INFORMATION CASE ANALYSIS

2-13-47

Thompson, Eda L.

Student

Appended

Age: 14 Grade: Classmate



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

2-13-47

Approved by:

Patient: McGowen, Don

Student:

Birth date:

Age:

16

Angle Classification:

Skeletal Pattern:

Minimum Average Maximum
(Data from Downs)

Before Treatment	After Treatment	Net Change
------------------	-----------------	------------

Racial Angle: 82.0° 87.7° 95.0°

80

Mandibular Plane Angle: 17.0° 21.0° 28.0°

32

Y. Growth Axis: 53.0° 59.4° 66.0°

69

Angle of Convexity: -8.5° 0.0° +10.0°

+20

AB Plane-Facial Plane / : -9.0° -4.5° 0.0°

-15

Denture to Skeletal Pattern:

Before	After	Net
--------	-------	-----

Cant of Occlusal Plane: +1.5° +9.3° +11.0°

+18

I to I Angle: 139.0° 135.4° 130.0°

105

I to Occlusal Plane: -3.5° -14.5° -10.0°

35

I to Mandibular Plane: -8.5° -1.0° +7.0°

+22

I to AP Plane (mm.): -1.0 2.7 5.0

11

Assessment of Anteroposterior Dysplasia

Dimension	STANDARDS (Cross cut one)		Patient's	DIFERENCE Orthognathic Progress
	Male	Female		

Glenoid Fossa to Sella: 18 17 21

-3

Sella to Ptm: 18 19 19

-1

Maxillary Length: 52 53 56

-4

Pal. 6: 15 16 11

+4

Mandibular Length: 10 10 115

+12

Total: 118 118 118

-8

AP Total: 118 118 118

+16

8



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

2-13-47

Approved by

Patient: McCoure, James

Student:

Birth date: 2-13-33 Age: 14

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Downs)

Before Treatment
Treatment
After Treatment

Radi ANgle

81.0° / 83.7° 95.0°

+8

Mandibular Plane Angle

12.0° / 16.0° 28.0°

-31

Z Growth Axis

53.0° / 59.4° 66.0°

-66

Angle of Convexity

-8.0° / 10.0° 20.0°

+8

AB Plane-Facial Plane

-18.0° / -4.0° 10.0°

-5

Denture to Skeletal Pattern

Before Treatment
After Treatment

Cent of Occlusal Plane

15.0° / 17.3° 21.0°

+15

Co 1 Angle

130.0° / 135.0° 150.0°

-120

Occlusal Plane

3.5° / 14.5° 6.0°

+19

to Mandibular Plane

-8.5° / -13.0° -10.0°

+3

to AP Plane (mm.)

-1.0° / -2.0° -1.0°

-9

Assessment of Anteroposterior Dysplasia

STANDARDS

Dimension

Male: Female

DIMENSIONS
DENTAL PLATE

OCCLUSAL PLATE

Levator naso-oralis

18.0° / 17.0° 23.0°

-5

Levator

18.0° / 17.0° 23.0°

+1

Levator naso-oralis

15.0° / 14.0° 20.0°

-4

Levator

15.0° / 14.0° 20.0°

-6

Levator naso-oralis

11.0° / 10.0° 16.0°

-16

Levator

11.0° / 10.0° 16.0°

-15

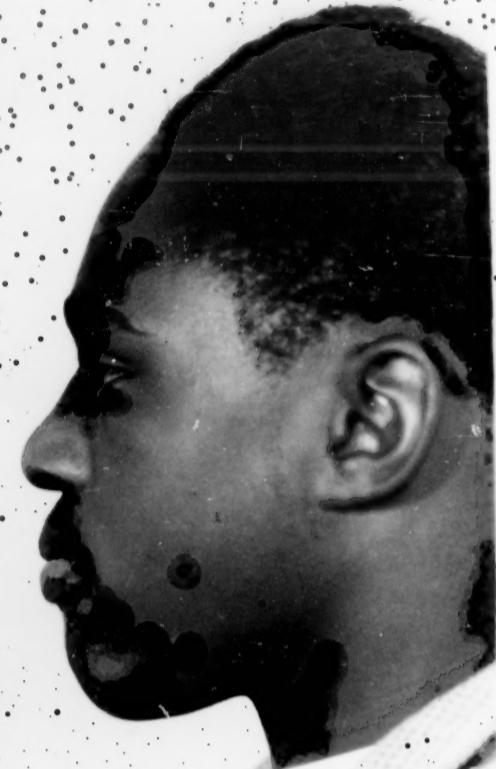
Total

+17

Levator naso-oralis

11.0° / 10.0° 16.0°

+2



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Date 2-13-47

Approved by

Patient Pace, James

Student

Birth date

Age

13

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Downs)

	Before Treatment	After Treatment	% Change
--	------------------	-----------------	----------

Facial Angle

82.0° 87.7° 95.0°

83

Mandibular Plane Angle

17.0 21.0 26.0

35

Y-Growth Axis

53.0 59.4 66.0

67

Angle of Convexity

-8.5 -3.0 +10.0

+9

AB Plane-Facial Plane /

-2.0 -4.8 0.0

-7

Denture to Skeletal Pattern

Gant of Occlusal Plane

+1.5 +9.3 +14.0

+16

I to I Angle

130.0 135.4 150.0

124

A to Occlusal Plane

3.5 14.5 20.0

+18

I to Mandibular Plane

-8.5 +1.4 +7.0

0

I to AP Plane (mm)

-1.0 2.7 5.0

7

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross out one)

Male Female

Patient's

DIFFERENCE

Orthognathic Program

Dimension

Ulnaroid Fossa to Sella

18 17

16

+2

Sella to Ptm

18 17

15

+3

Maxillary Length

52.5 52

50

+2

Ptm to Sella

75 76

79

-4

+12

Mandibular Length

103 103

108

+5

Analysis of Anteroposterior
Dysplasia in Patient James

+8



UNIVERSITY OF TORONTO
COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

Date 1-24-49

Approved by

Patient

Vaughn, Aubrey

Student

Birth date

11-10-24

Age 24

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Downs)

	Before Treatment	After Treatment	Net Change
--	------------------	-----------------	------------

Facial Angle

82.6° 87.1° 95.0°

85

Mandibular Plane Angle

17.0 21.0 28.0

33

Y-Growth Axis

51.0 59.0 66.0

67

Angle of Convexity

-8.5 -10.0 -10.0

+15

AB Plane-Facial Plane

-7.0 -4.8 0.0

-10

Denture to Skeletal Pattern

	Before	After	Net
Centr. of Occlusal Plane	+1.5	+9.3	+11.8
E-Fo-I Angle	133.8	135.4	150.0
E-Fo-Dental Plane	3.5	11.5	10.0
E-Fo-Mandibular Plane	6.5	1.4	+7.0
E-Fo-AP Plane (mm)	-1.0	2.7	5.0

	Before	After	Net
	+13		
	131		
	+21		
	+3.5		
	7		

Assessment of Anteroposterior Dysplasia

Dimension	STANDARDS (Cross section)		Patient's Value	D I F F E R E N C E Orthognathic Prognostic
	Male	Female		
Glenoid recess to Sella	18	17	14	+3
Sella to Ptm	18	17	16	+1
Mandibular Length	54	52	59	-7
PM	16	18	19	-3
Vertebral Subluxation	105	105	105	+4
Total				-10
				+8

Anteroposterior
Dysplasia Orthognathic Prognosis

-2



COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

CASE ANALYSIS

3-21-49

APPROVED BY

Student

Patient Nelson, Mrs. Oceola

Birth date

Age

21

Angle Classification

Skeletal Pattern

Minimum Average Maximum
(Data from Downs)

Before
Treatment

After
Treatment

Facial Angle

83.0° 87.7° 95.4°

91

Condibular Plane Angle

17.9 21.6 28.0

22

% Growth Axis

53.3 59.4 65.0

57

Angle of Convexity

8.5 10.0 10.4

+8

AB Plane-Facial Plane

9.0 10.5 10.0

-6

Dentition to Skeletal Pattern

BEFORE AFTER

Anterior Occlusal Plane

115 122 131

+8

SN Angle

130.0 135.4 138.0

116

Intra-Occlusal Plane

135.9 137.5 139.0

29

Condibular Plane

10.5 11.5 12.0

+14

AB Plane (mm)

1.0 1.5 1.5

10

Assessment of Anteroposterior Dysplasia

STANDARDS

(Cross-cut line)

Male Female

Ref. Ref.

DIFERENTIAL

ANTEROPOSTERIOR DYSPLASIA

Maxillary Base to Sella

118 120 122

12.5

4.5

SN

118 120 122

20.5

3.5

Maxillary Length

138 140 142

58

6

SN

138 140 142

26.5

10.5

Condibular Plane

100 102 104

108

7

SN

100 102 104

-20

+11.5

Assessments of Anteroposterior Dysplasia by Cross-Cut Method - Continued

-8.5



**COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS**

CASE ANALYSIS

Date 3-21-49

Approved by

Patient Dickey, Dr. Lloyd V.

Student

32

Angle Classification

Assessment of Anteroposterior Dysplasia

Dimension	STANDARDS (Cross cut one)		Patient's	D I F F E R E N C E Orthognathic Prognathic
	Male	Female		
Glenoid Fossa to Sella	18	17	20	3
Sella to Ptm	18	17	23	6
Maxillary Length	52	52	57.5	5.5
Ptm - S	15	16	26.5	10.5
Mandibular Length	103	101	112	11
Totals:			-25	+11

-11-

